Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

species has been figured by Marsh (*Amer. Jour. Sci. Arts*, 1889, p. 336), under the name of *Hadrosaurus breviceps*. The lower jaw is figured as the upper, and is printed upside-down on the page.

AGATHAUMIDÆ. It is now evident that the genus Polyonax Cope (Triceratops Marsh) had elongate frontal horns, a relatively short one on the nasal bones, while Monoclonius Cope (Ceratops Marsh) has shorter horns on the frontals, and an elongate one on the nasals. The three coösified cervical vertebræ which I described in 1876 (Proceedings Academy, Phila., October,) occupy a position below the posterior prolongation of the parietal bone in Monoclonius. This coössification is appropriate to the immovable condition of these vertebræ in the position mentioned. Marsh (*Amer. Jour. Sci. Arts*, 1890, Jan.) denies postacetabular pubes to the members of this family. I find them, however, in Monoclonius.—E. D. COPE, *March 5, 1890*.

MINERALOGY AND PETROGRAPHY.[1]

Petrographical News.—In a most excellent paper, so full of information as to defy any attempt to do it justice in these notes, Lemberg[2] has given the results of his experiments on the stability of many rock-forming minerals when treated with water at high temperatures, and their power of resistance when subjected to the influence of solutions of various salts. The object of the experiments was to determine the cause of the widespread existence of certain minerals like leucite and hauyne in effusive rocks, and their entire absence from intrusive rocks, and also to determine the conditions that gave rise to the properties of elæolite and orthoclase on the one hand, and to nepheline and sanidine on the other. The only conclusions that can be referred to in this place are those with reference to hauyne and leucite. The existence of the former mineral in effusive rocks is ascribed to the oxidizing effects of the oxygen of the atmosphere upon the sulphur compounds of these rocks, and the reactions set up between the solutions thus produced and the constituents of the rocks. The non-existence of this mineral in irruptive rocks is regarded as due to the protection from atmospheric oxygen which these rocks enjoyed as a consequence of their mode of formation. Its absence from all effusives is the result of the comparatively small quantity of oxygen in the air of early geological ages. The absence of leucite from intrusive rocks is thought to be due to the fact that the mineral can separate from a magma only under low pressure. The great stability of elæolite and orthoclase as compared with nepheline and sanidine is supposed to be the consequence of their formation under great pressure. So many other conclusions of equal interest are indicated throughout the paper, that it will well repay reading by any one interested in chemical geology or in the study of altered phases of rock masses.——The eruptive rocks[3] west and south of Sarn, Caernarvonshire, Wales, comprise granites, gabbros, diorites and gneissic diorites, diabase, picrite and dolerite. The gabbros and diorites are intimately related, the gneissic varieties of the latter having been derived from the former by pressure alteration. In the diabases augite is found in idiomorphic crystals and in ophitic plates. The hornblende occurs, (1), as an original constituent, enclosing grains of augite; (2), as a secondary product surrounding augite cores; (3), as a zonal growth around augites with a corresponding orientation; and (4), as a secondary fringe around original hornblende crystals. ——Harker[4] describes from Mynydd Mawr, three miles west of Snowdon, a bluish-gray compact rock, with porphyritic black crystals, without idiomorphic outlines, and twinned crystals of feldspar. The groundmass of the rock is a fine grained mixture of quartz and orthoclase, in which are the above mentioned phenocrysts and small acicular colorless crystals, with a faint blue tint when their long axes are parallel to the vibration planes of the nicols. They have a high index of refraction and nearly parallel extinctions, and are arrayed in flow lines. The large black crystals are pleochroic in blue tints, and upon close examination are found to be riebeckite, to which species the small acicular crystals are thought also to belong.——Mr. Diller[5] has separated the mineral supposed to be anatase in the periodotite from Elliott Co., Ky., and has had it analysed. Its composition is found to correspond with that of perofskite.

---

[1] Edited by Dr. W. S. Bayley, Colby University, Waterville, Me.

[2] *Zeits. d. deutschen geol. Gesell.*, XL., 1888, p. 625.

Mineralogical News.—Prof. Clarke[6] objects to Tschermak's theory with respect to the composition of the micas, in that, of the four fundamental molecules assumed by this mineralogist as the basis of his theory, three of them are unknown in nature, and two are chemically improbable. Further, each belongs to a different type, and therefore would not be expected to be pseudomorphic. Clarke suggests that all of the true micas are isomophous combinations of derivatives of aluminium orthosilicate [$Al_4(SiO_4)_3$] and of the corresponding polysilicic compound [$Al_4(Si_3O_8)_3$]. The different micas are taken up seriatim, and it is shown how each may be regarded as a compound produced by the isomorphous mixture of derivatives of these. *Muscovite*, for instance, may be looked upon as $Al_3(SiO_4)_3KH_2$, in which one atom of Al has been replaced by potassium and hydrogen, and *lepidolite* as a mixture of $Al_3(SiO_4)_3KHLi$ and $Al(Si_3O_8)_3K_3Li_3(AlF_2)_3$. The members of the *clintonite* group are also regarded as related to the micas, and to have the general formula $R'_3{\equiv}SiO_4{-}Al{=}R''O_2$. The formulas suggested by Prof. Clarke certainly have the advantage over those of Tschermak as far as simplicity is concerned, but whether they will prove of more value in the discussion of the composition of the micas, it remains for further work to determine.——Among a few minerals[7] recently described from Brazil the following present some points of interest. *Zircon* from the sands of Rio Verdinho, near Caldas, Minas Geraes, shows on cleavages parallel to ∞ P two systems of striations, one parallel to the diagonal of the cross sections, and another nearly normal to the P face. Sections perpendicular to the optical axis are uniaxial in some parts, and in others show a biaxial figure, probably due to a very fine system of twinning lamellæ. Fine large *apatite* crystals from the red orthoclase of a coarse-grained gneiss from Pedreira de Sandade, near Rio Janeiro, resemble very closely the apatites of Renfrew, Canada. They are of various colors, and possess the rounded contours of the Canadian specimens. Green *fibrolite* from Diamantia owes its color to the inclusion of numerous needles of tourmaline.——Miers and Prior[8] have recently made a very thorough examination of *proustite* and *pyrargyrite*. Their article begins with an historical and critical review of the work previously done on these interesting minerals. It continues with a discussion of the morphological and physical properties of all the crystals in the possession of the British Museum, and a review of the work of former mineralogists. The paper concludes with the results of analyses of ten specimens of pyrargyrite and five of proustite, and is accompanied by a plate on which are represented twenty-eight figures of crystals. Their results may be briefly summed up as follows: (1), proustite and pyrargyrite are distinct species, the former with a rhombohedral angle of 72° 12′, a sp. gr. of 5.57, and a cinnabar—red streak; the latter with 71° 22′ as the rhombohedral angle, a specific gravity of 5.85, and a purplish red streak. (2), Pyrargyrite twins parallel to $\frac{1}{4}$R, R, ∞P2—$\frac{1}{2}$R, and oR, proustite parallel to $\frac{1}{4}$R, R, oR and —$\frac{1}{2}$R. (3), Both minerals are rhombohedral, and none of the typical forms exist at the same time in both plus and minus positions. (4), Pyrargyrite is $3Ag_2S.Sb_2S_3$, with a small percentage of As, and $a : c = 1 : .7892$; and proustite is $3Ag_2SAs_2S_3$, with occasionally a small amount of Sb, and $a : c. = 1 : .8038$. Many new forms are described in pyrarygrite and a few in proustite.——Fine crystals of *gold* from the placers of the Senarka and the Kamenka rivers, Gouvernement Orenburg, Russia, are described by Jeremejew[8] in the *Goruyi Journal* for 1887. Combinations of $\infty O \infty$, O, and other more complicated forms are beautifully twinned parallel to an octahedral face. Pseudomorphs of limonite after pyrite, anatase, rutile, and many other interesting minerals associated with the gold, are also carefully described and figured.——Molengraff[9] has contributed to the study of quartz an interesting article on the rounded faces on many crystals. Since these are nearly always covered with concavities of the shape of the etched figures characteristic of quartz, the author regards them as having been produced by natural etching. The effect of alkaline carbonates, hydrofluoric acid, and potassium hydroxide upon crystals has been studied, resulting in the discovery that alkaline carbonates at 125° quickly produce etched figures in such a way that the etched faces are rapidly rounded.——According to Valentin[10] the abnormal crystallographic development of certain *barite* crystals from the Kronthal, in Alsace, is also due to natural etching. Concavities occurring on $P\breve{\infty}$, oP, and $\frac{1}{2}P\bar{\infty}$ are identical with those produced by artificial means.——After discussing the analyses of *atacamite* that have been published within the past ninety years, together with new analyses published by himself, Darapsky[11] concludes that the substance called by this name is probably an isomorphous mixture of molecules varying within the limits $CuCl_2.3CuO.3H_2$, and $CuCl_2.4CuO.6OH_2O$, just as plagioclase is an isomorphous mixture of the albite and anorthite molecules.——Having obtained a few large, pure crystals of *pseudobrookite* from Havredal, Bamle, Norway, Cederström[12] has analyzed them, and found their composition to be simpler than has been supposed. The figures obtained by him are: $Fe_2O_3 = 56.42\%$, $TiO_2 = 44.26\%$, corresponding to $Fe_4(TiO_4)_3$. The author thinks that *brookite* may be $Ti_4(TiO_4)_3$.——At the temperature of melting copper the mineral *cyanite*, according to Vernadsky,[13] loses its color, and its characteristic physical and optical properties, and assumes those of *sillimanite*. Hence it is regarded as a triclinic form of Al_2SiO_5, whose orthorhombic variety is the last-named mineral. The rocks in which cyanite is found (the crystalline schists) can therefore not have been formed at high temperatures where this mineral is an essential, original component.——Hamberg[14] has discovered well-developed crystals of *lead* in the iron and manganese mines of Harstig, at Pajsberg, Sweden. The silver-white crystals are imbedded with arsenates in calcite nests. They show the forms O, $\infty O \infty$, ∞O, $2O2$, $5O$, and $\infty O4$, and have a specific gravity of 11.37. The author explains the origin of the lead by supposing the reduction of lead compounds by arsenious acid in its oxidation to the arsenic form. Igelström[15] records the same mineral as occurring in thin plates and fine veins in an amorphous blood-red neotokite-like mineral, abundant at the manganese and iron mine Sjögrufvan, in the Parish Grytthyttan, Örebro, Sweden.——An analysis of a manganese ore from the Crimona mine, Augusta Co., Va., yielded Mr. Jarman:[16]

---

[3] Harker, *Quart. Jour. Geol. Soc.*, 1888, p. 442.

[4] *Geol. Magazine*, May, 1888, p. 224.

[5] *Amer. Jour. Sci.*, March, 1889, p. 219.

[6] *Amer. Jour. Sci.*, November, 1889, p. 384.

---

[7] Dom Pedro Augusto, *Min. und. Pet. Mitth.*, X., p. 451.

[8] *Zeits. für Kryst.*, XV., p. 129, and XIV., p. 113.

---

[8] Ref. *Zeits. für Kryst.*, XV., p. 526.

[9] Ib., 1888, XIV., p. 173.

[10] Ib., XV., 1889, p. 576.

[11] *Neues Jahrb. f. Min.*, etc., 1889, II., p. 1.

[12] *Zeits. f. Kryst.*, 1889, XVII., p. 13.3

MnO	O	Fe_2O_3	CaO	NiO	CoO	K_2O	Na_2O	H_2O	Lers.
78.27	17.61	.62	.09	.22	.27	.18	.23	2.08	.29

a result which indicates a remarkably pure ore.——In an article on the minerals from the Tyrol, Cathrein[17] mentions the discovery of the two new planes— $\left[\frac{\infty O4}{2}\right]$ and $\left[\frac{4O2}{2}\right]$ on *pyrite*, and $\frac{7}{6}O$ on *pleonast* from Monzoni, and describes a pseudomorph of *quartz* after apophyllite from the Fassathal.——Pseudomorphs of *hematite*, after pyrite, found in the calcareous red slate of Torquay, England, are described by Solly.[18]——Mr. Yeates[19] describes a *copper* pseudomroph, after azurite, from Grant Co., New Mexico, as consisting of spongy copper, into which kaolin has been pressed.——A pseudomroph of *pyrolusite* after manganite, has been obtained by Gorgeu[20] upon heating crystals of the latter mineral to a temperature of about 300°.——Dick[21] finds the kaolin from near Porth-yr-hwch, Anglesey, to be monoclinic, with $a : b : c = .5748 : 1 : 4.7267$, and the face $\infty \breve{P} \infty$, ∞P, P, oP prominent. Its specific gravity is 2.62, and composition: $SiO_2 = 46.53$, $Al_2O_3 = 38.93$, $H_2O = 14.54$.——Des Cloizeaux[22] pronounces the mazapilite of Koenig to be orthorhombic.

---

[13] *Bull. Soc. Franc. d. Min.*, XII., p. 447.

[14] *Zeits. f. Kryst.*, 1889, XVII., p. 253.

[15] *Neues. Jahrb. f. Min.*, etc., 1889, II., p. 19.

[16] *Amer. Chem. Jour.*, XI., p. 39.

[17] *Min. u. Petrog, Mitth.*, 1889, X., p. 395.

[18] *Min. Magazine*, 1889, May, p. 183.

[19] *Amer. Jour. Sci.*, Nov. 1889, p. 405.

BOTANY.

On the Hypophyllous, Epiphyllous, or Amphigenous Habits of Uredineæ.—Whether the *Uredineæ* are hypophyllous, epiphyllous, or amphigenous is, I think, determined largely by the character of the leaf. On those leaves which have stomata on the lower surface only, they are with few exceptions hypophyllous. They seem to normally infect the lower surface of the leaf, and spread in age, or in later stages, to the upper.

Taking Dr. Burrill's pamphlet on the *Uredineæ* as a basis for estimation, we may draw some interesting conclusions. Of the some one hundred and thirty species there given only *three* are epiphyllous, and these furthermore are frequently amphigenous. By far the greater number of species are hypophyllous only, while still a large number are amphigenous (about 48 amphigenous to 74 hypophyllous). Of the forty-six species and varieties of *Æcidium* all are hypophyllous but three, and these are amphigenous. This fact indicates that the teleutospores and their sporidia, when they germinate in the spring, must, in almost every case, enter the tissue of the host-plant through some stoma on the lower surface of the leaf, irrespective of whether the stomata occur on the upper surface also or not; and that here, in the looser soft tissue of the lower surface, more sheltered from the sun than if on the upper surface, the mycelium grows, giving rise to the first stage, the *Æcidium*, which, springing likely from the older, more compact hyphæ, bursts through the nearest and least firm, compact lower surface. In *Uredo*, the middle stage, the examination of one

---

[20] *Bull. Soc. Franc. d. Min.*, XI., p. 196.

[21] *Min. Magazine*, May, 1888, p. 15.

[22] *Bull. Soc. Franc. d. Min.*, XII., p. 441.